CLAIMS

1. A node for a telecommunications network, comprising:

a segmentation and reassembly module (SAR module) to perform segmentation and reassembly (SAR) on ATM cells received by the node, said SAR module particularly providing Virtual Channel Identifier (VCI) and Virtual Path Identifier (VPI) translation (referred to as VCI/VPI translation) and having a direct memory access (DMA) mechanism for a storage external to said SAR module, said SAR module performing a first DMA access when said VCI/VPI translation are representative of an error code correcting (ECC) procedure to be carried out in said node, and said SAR module performing a second DMA access when said VCI/VPI translation correspond to a message that does not require a local ECC procedure;

a coder/decoder module for performing an ECC procedure on cells; and,

a controller to control said coder/decoder module to perform an error correcting procedure in response to the detection of said first DMA access.

2. The apparatus as in claim 1 wherein said SAR module further comprises:

a controller to perform said first DMA at a first address and to perform said second DMA at a second address.

3. The apparatus as in claim 1 wherein said SAR module further comprises:

an address decoder to interpret VCI/VPI identifiers to control whether or not an ECC procedure is done.

4. The apparatus as in claim 1 further comprising:

a dual-port first RAM storage having a first port designed to receive the data transferred via DMA access from the internal circuitry of said SAR module, and having a second port for transferring data to said coder/decoder module;

second RAM storage arranged in a FIFO organization for receiving the data processed by said coder/decoder module when the received message requires the need of an ECC procedure, or the data directly extracted from said dual-port first RAM storage by said controller when no ECC procedure is required;

an address decoder to detect whether said SAR means performs said first or said second DMA access, and issuing a corresponding interrupt to said controller to control the performance of said ECC procedure in response to detecting said interrupt.

5. The apparatus as in claim 1 further comprising:

logic circuit to load said SAR module with the parameters characteristrizing the number of cells forming a full message for which an error correcting procedure applies.

6. The apparatus as in claim 1 further comprising:

a transmit part, said transmit part having a first dual-port RAM storage, said first dual-port RAM storage having a first port connected to a processor and a second port;

a second dual-port RAM storage having a first port receiving the data coming either from said coder/decoder module or said second port of said first storage, said second dual-port RAM storage having a second port that can be accessed by said DMA mechanism of said SAR module;

control to cause said second dual-port storage to be loaded with a payload of a message, plus an additional payload containing a syndrome computed by said coder/decoder module when an ECC mechanism is required, whereby the contents of all the payloads plus

said syndrome are transferred to said SAR module for reassembly prior to their transmission to a network.

7. The apparatus as in claim 1 further comprising:

a logic circuit to load said SAR module with the parameters characterizing the number of cells forming a full message for which an error correcting operation applies.

8. The apparatus as in claim 1 further comprising:

said SAR module is initialized in order to process message of four cells, plus an additional fifth cell for conveying a syndrome computed by said coder/decoder module when an ECC mechanism is required.

9. The apparatus as in claim 1 further comprising:

said coder/decoder module is a Reed-Solomon coder-decoder to perform an ECC procedure.

10. The apparatus as in claim 1 further comprising:

said coder/decoder module is a Hamming coder and decoder to perform an ECC procedure.

11. A node for a telecommunications network, comprising:

a segmentation and reassembly module (SAR module) to perform segmentation and reassembly (SAR) on cells received by the node, said SAR module particularly providing Virtual Channel Identifier (VCI) and Virtual Path Identifier (VPI) translation (referred to as VCI/VPI translation) and having a direct memory access (DMA) mechanism for a storage external to said SAR module, said SAR module performing a first DMA access when said VCI/VPI translation are representative of an error code correcting (ECC)

procedure to be carried out in said node, and said SAR module performing a second DMA access when said VCI/VPI translation correspond to a message that does not require a local ECC procedure;

a coder/decoder module for performing an ECC procedure on cells; and,

a controller to control said coder/decoder module to perform an error correcting procedure in response to the detection of said first DMA access.

12. A node for a telecommunications network, comprising:

a segmentation and reassembly module (SAR module) to perform segmentation and reassembly (SAR) on cells received by the node, said SAR module particularly providing Virtual Channel Identifier (VCI) and Virtual Path Identifier (VPI) translation (referred to as VCI/VPI translation) and having a direct memory access (DMA) mechanism for a storage external to said SAR module, said SAR module performing a first DMA access when said VCI/VPI translation are representative of an error code correcting (ECC) procedure to be carried out in said node, and said SAR module performing a second DMA access when said VCI/VPI translation correspond to a message that does not require a local ECC procedure;

means for controlling a coder/decoder module to perform an error correcting procedure in response to the detection of said first DMA access.

13. A method for operating a node of a telecommunications network, comprising:

performing segmentation and reassembly by a segmentation and reassembly module (SAR module) on ATM cells received by the node, said SAR module particularly providing Virtual Channel Identifier (VCI) and Virtual Path Identifier (VPI) translation (referred to as VCI/VPI translation) and having a direct memory access (DMA) mecha-

nism for a storage external to said SAR module, said SAR module performing a first DMA access when said VCI/VPI translation are representative of an error code correcting (ECC) procedure to be carried out in said node, and said SAR module performing a second DMA access when said VCI/VPI translation correspond to a message that does not require a local ECC procedure;

performing an ECC procedure on cells by a coder/decoder module; and,

controlling said coder/decoder module to perform an error correcting procedure in response to the detection of said first DMA access.

14. A method for operating a node of a telecommunications network, comprising:

performing segmentation and reassembly by a segmentation and reassembly module (SAR module) on cells received by the node;

providing Virtual Channel Identifier (VCI) and Virtual Path Identifier (VPI) translation (referred to as VCI/VPI translation) by said SAR module;

storing data by said SAR module by a direct memory access (DMA) mechanism, said SAR module performing a first DMA access when said VCI/VPI translation are representative of an error code correcting (ECC) procedure to be carried out in said node, and said SAR module performing a second DMA access when said VCI/VPI translation correspond to a message that does not require a local ECC procedure;

performing an ECC procedure on cells by a coder/decoder module; and,

controlling said coder/decoder module to perform an error correcting procedure in response to the detection of said first DMA access.

15. The method of claim 13 or claim 14 further comprising:

performing said first DMA at a first address and to performing said second DMA at a second address.

16. The method of claim 13 or claim 14 further comprising:

interpreting VCI/VPI identifiers to control whether or not an ECC procedure is done.

17. The method of claim 13 or claim 14 further comprising:

receiving at a first port of a dual-port first RAM storage the data transferred via DMA access from the internal circuitry of said SAR module, and said first storage having a second port for transferring data to said coder/decoder module;

receiving the data processed by said coder/decoder module at a second RAM storage when the received message requires the need of an ECC procedure;

detecting whether said SAR means performs said first or said second DMA access; and,

issuing a corresponding interrupt to said controller to control the performance of said ECC procedure in response to detecting said interrupt.

18. The method of claim 13 or claim 14 further comprising:

loading said SAR module with the parameters characterizing the number of cells forming a full message for which an error correcting operation applies.

19. The method of claim 13 or claim 14 further comprising:

initializing said SAR module in order to process a message of four cells, plus an additional fifth cell for conveying a syndrome computed by said coder/decoder module when an ECC mechanism is required.

20. The method of claim 13 or claim 14 further comprising: using a Reed-Solomon coder-decoder to perform said ECC procedure.

21. The method of claim 13 or claim 14 further comprising: using a Hamming coder-decoder to perform said ECC procedure.

22. A computer readable media having instructions written thereon for execution in a node to practice of the method of claim 13 or claim 14.

23. Electromagnetic signals propagating on a computer network, said electromagnetic signals carrying information for execution in a node to practice of the method of claim 13 or claim 14.